

L 14251-66 . EWT(1)/EWT(m)/FS(v)-3 SCTB/DIAAP DD/RD

ACC NR: AT6003849

SOURCE CODE: UR/2865/65/004/000/0139/0164

AUTHOR: Yarmonenko, S. P.; Konoplyannikov, A. G. 65

ORG: none

2, 44.5 19  
TITLE: Antiradiation protection in connection with the problem of the RBE of radiations with low specific ionizations

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 139-164

TOPIC TAGS: ionizing radiation, RBE, linear energy transfer, radiation protection, x ray irradiation, gamma irradiation, experiment animal, rat, mouse, cell physiology, fungus, radiation dosimetry, antiradiation drug

ABSTRACT: In this review article, the authors present the results of 74 Soviet and 50 Western studies in tabular and graphic form. Some of the Soviet results are presented in the following figures and tables:

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Table 1. The RBE of radiations of low specific ionization (linear energy transfer (LET) in kev per 1 micron of passage)

Recorded Effect	Standard Radiation		Compared Radiation		
	Type	LET	Type	LET	RBE
Death of yeast cells	x-rays 200 kv	2.9	x-rays particles 22 mev	0.2	0.85
Same as above, haploid strain	x-rays 180 kv	3.0	gamma rays Co-60	0.3	0.76
Same as above, diploid strain	x-rays 180 kv	3.0	gamma rays Co-60	0.3	0.84
Chromosomal aberrations in a human cell culture at various cellular phases	x-rays 180 kv	3.0	gamma rays Co-60	0.3	0.17 0.86
Rats, LD 50/30	x-rays 180 kv	3.0	gamma rays Co-60	0.3	1.0

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Table 1. The RBE of radiations of low specific ionization (linear energy transfer (LET) in kev per 1 micron of passage) (Cont.)

Rabbits, LD 100/30	x-rays 180 kv	3.0	gamma rays Co-60	0.3	1.5- 1.7
Dogs, LD 100/30	x-rays 180 kv	3.0	gamma rays Co-60	0.3	1.3- 1.6
Dogs, LD 50/30	x-rays 180 kv	3.0	gamma rays Co-60	0.3	1.5
Chromosomal aberrations in rat liver cells	x-rays 180 kv	3.0	gamma rays Co-60	0.3	0.7

Table 2. Dependence of RBE on the hardness of radiation and species of animal

Animal	MLD 100/30		RBE of Co-60 gamma rays
	x-rays, 180 kv	gamma rays, Co-60	
Mice	700	850	0.82
Rats	850	750	1.13

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Table 3. The RBE of high-energy particles (LET in Kev/micron)

Recorded Effect	Standard Radiation		Compared Radiation		
	Type	LET	Type	LET	RBE
Death of yeast cells	x-rays 200 kv	2.9	deutrons 190 Mev	0.9	1.0
Same as above, haploid strain	x-rays 180 kv	3.0	protons, 130-660 Mev	0.3- 0.7	0.76
Same as above	gamma rays Co-69	0.3	protons 130- 660 Mev	0.3- 0.7	1.0
Same as above, diploid strain	gamma rays Co-69	0.3	protons 660 Mev	0.3	1.0
Sex determined recessive mutations in fruit flies	x-rays 180 kv	3.0	protons 660 Mev	0.3	1.0
Mice, LD 50/30	x-rays 180 kv	3.0	protons 660 Mev	0.3	0.7*
Same as above	x-rays 180 kv	3.0	protons 660 Mev	0.3	0.67

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Table 3. The RBE of high-energy particles (cont.)

Same as above	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.9
Same as above	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.8*
Same as above	gamma rays Co-60	0.3	protons 130 Mev	0.7	0.8
Same as above	gamma rays Co-60	0.3	protons 126 Mev	0.7	0.7
Death of mice	x-rays 180 kv	3.0	protons 660 Mev	0.3	1.0
Mice, LD 50/30	x-rays 180 kv	3.0	protons 660 Mev	0.3	0.7*
Same as above	gamma rays Co-60	0.3	protons 510 Mev	0.3	0.75
Same as above	gamma rays Co-60	0.3	protons 240 Mev	0.4	0.73
Same as above	gamma rays Co-60	0.3	protons 126 Mev	0.7	0.70
Death of rats due to fraction- ized radiation	x-rays 180 kv	3.0	protons 510 kv	0.3	0.8

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Table 3. The RBE of high-energy particles (cont.)

Death of dogs from a single irradiation	gamma rays Co-60	1.3	protons 510 and 240 Mev	0.3-0.4	1.14
Same as above	x-rays 180 kv	3.0	protons 126 Mev	0.7	1.0
Death of dogs due to fractionized irradiation	x-rays 180 kv	3.0	protons 510 Mev	0.3	1.0
Rats, state of marrow and blood	x-rays 180 kv	3.0	protons 660 Mev	0.5	<1.0
Rabbits, hematological shifts	x-rays 180 kv	3.0	protons 480 Mev	3.0	>1.0
mice, bone marrow cell degeneration	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.9
mice, chromosomal aberrations in bone marrow cells	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.9*

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ACC NR: AT6003849 Table 3. The RBE of high-energy particles (cont.)

rats, chromosomal aberrations in liver cells	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.9*
mice, chromosomal aberrations in the corneal epithelium	x-rays 180 kv	3.0	protons 126 Mev	0.7	0.67
	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.9*
mice, decreased weight of testes	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.3
mice, decreased weight of testes and dominant lethality	x-rays 180 kv	3.0	protons 660 Mev	0.3	0.6*
	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.85*
rats, decreased weight of testes	x-rays 180 kv	3.0	protons 660 Mev	0.3	1.0*
Same as above	gamma rays Co-60	0.3	protons 660 Mev	0.3	0.8
rats, male dominant lethality	x-rays 180 kv	3.0	protons 510 Mev	0.3	0.7

\*RBE coefficient computed with correction for the purpose of making dosimetry more precise.

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Table 4. Viability of rats exposed to proton irradiation  
according to different Soviet researchers

Proton energy, Mev	Indices	Dose, rad
660	LD 50/30 LD 100/30	760 1050
510	LD 50/30 LD 100/30	580 830, 430-550

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Table 5. Determination of the constant K for different radiations of low specific ionization

Ionizing Radiation	LD 100/30, rad	LD 100/4, rad	K
			$\frac{LD\ 100/4}{LD\ 100/30}$
660 Mev protons	950-1000	1350-1450	1.4
Co-60 gamma rays	850-900	1200-1300	1.4
x-rays	700-750	1100-1300	1.7

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Table 6. Comparative radioprotective effect of some agents during radiations of low specific ionization\*

Protectors, how administered	x-rays, 180 kv 670-720 rad		gamma rays, Co-60 810-1100 rad		660 Mev protons, 950-1100 rad	
	no. mice	% viability	no. mice	% viability	no. mice	% viability
control	120	5	115	2	140	2
mercamine chlorhydrate, 150 mg/kg	40	60	50	70	70	60
cystamine dichlorhydrate, 150 mg/kg	30	46	30	30	46	95
AET dihydro- bromide, 150 mg/kg	89	62	30	40	68	85
	-	-	40	75	60	81

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ACC NR: AT6003849

Table 6. Comparative radioprotective effect of some agents during radiations of low specific ionization\* (cont.)

Protectors, how administered	x-rays, 180 kv 670-720 rad		gamma rays, Co-60 810-1100 rad		660 Kev protons, 950-1100 rad	
	no. mice	% viability	no. mice	% viability	no. mice	% viability
1-cysteine chlor- hydrate, 150 mg/kg	20	70	-	67	15	73
2-aminothiazoline bromhydrate, 150 mg/kg	-	35	-	-	15	60
3-aminothiosul- phuric acid, 250 mg/kg	50	50	-	-	15	27
5-hydroxytryp- tamine creatinine sulphate, 75 mg/kg	80	50	40	60	54	43
					30	43
5-methoxytryp- tamine chlorhy- drate, 50 mg/kg	20	65	20	45	30	50
	40	90	20	75	69	48
	75	68	40	70	30	60
					30	70

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ACC NR: AT6003849 Table 6. Comparative radioprotective effect of some agents during radiations of low specific ionization\* (cont.)

Protectors, how administered	x-rays, 180 kv 670-720 rad		gamma rays, Co-60 810-1100 rad		660 Mev protons, 950-1100 rad	
	no. mice	% viability	no. mice	% viability	no. mice	% viability
tryptamine chlor- hydrate, 100 mg/kg	30 30	4 36	20 -	20 -	20 -	15 -
cystamine dichlor- hydrate, 300 mg/kg	30	30	-	-	15	27
ATP, 250 mg/kg	-	-	-	-	15	40
testosterone propionate, 100 mg/kg (for 14 days)	-	-	-	17-29	20	35

\*Injection of agents 5-20 min prior to irradiation (excluding testosterone propionate)

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Table 7. Effectiveness of combined radioprotectors

Dose, rem	Preparations, dose	x-rays 180 kv		gamma rays Co-60		protons 660 Mev	
		no. mice	% viab.	no. mice	% viab.	no. mice	% viab.
700- 750	mercamine, 150 mg/kg and 5 methoxytrypta- mine, 75 mg/kg	50	92	18 19	95 95	33	67
1000	Same as above	40	27	-	-	40	50
950	mercamine, 150 mg/kg, and serotonine, 75 mg/kg	-	-	-	-	30	53
950	mercamine, 150 mg/kg	-	-	-	-	15	33
750	hydroxylamine, 60 mg/kg and AET, 150 mg/kg	20	90	27	81	31	87

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Table 7. Effectiveness of combined radioprotectors (cont.)

Dose, rem	Preparations, dose	x-rays 180 kv		gamma rays Co-60		protons 660 Mev	
		no. mice	% viab.	no. mice	% viab.	no. mice	% viab.
950	mercamine, 150 mg/kg and potassium cyanide, 2 mg/kg	-	-	-	-	-	-
950	mercamine, 150 mg/kg	-	-	-	-	15	40
		-	-	-	-	15	33

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L 38902-66 EWT(m)

ACC NR: AP6029553

(A)

SOURCE CODE: UR/0321/66/027/002/0145/0162

AUTHOR: Konoplyannikov, A. G.; Kudryashov, Yu. B.

ORG: Department of Biophysics, Faculty of Biology and Soil Science, Moscow State University (Kafedra biofiziki biologo-pochvennogo fakul'teta Moskovskogo gosudarstvennogo universiteta)

TITLE: Biological effect of high-energy protons, fission neutrons, gamma- and x-rays on animals

SOURCE: Zhurnal obshchey biologii, v. 27, no. 2, 1966, 145-162

TOPIC TAGS: radiation biologic effect, physiologic parameter, experiment animal, blood, radiation sickness, gastrointestinal tract, circulatory system

ABSTRACT: The authors conducted experiments to study the biological effect of 660 Mev protons, cobalt-60 gamma rays, x-rays with a maximum voltage of 180 kv, and fission neutrons. The high-energy proton source used was the synchrocyclotron of the Nuclear Problems Laboratory of the Joint Institute for Nuclear Research (Dubna). The fission-neutron source was an IBR-type atomic reactor of the Neutron Physics Laboratory of the same institute. The gamma-ray source was the GUT Co-400. The x-ray source was the RUT-3-20-200. The experimental animals were mice and rats of mixed strains and chinchillas. The indices employed were: mortality of the animals, changes in body weight and the weight of individual organs (spleen,

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UDC: 577.391

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small intestine, testicles), changes in the number of leukocytes in the blood and the number of bone marrow cells, erythrogram changes, changes in the autolysis rate, certain changes in the lipids (the formation of lipid radiotoxins), and postradiation recovery in the mice.

A comparison of various manifestations of radiation damage to animals exposed to ionizing radiation with various values of the linear energy transfer (LET) confirms the similarity of the biological effect of 660 Mev protons, x- and gamma-irradiation, and fission neutrons. This similarity is manifested by the radiation damage caused by different forms of radiation in lethally equivalent doses (taking the RBE calculated according to LD<sub>50/30</sub>) and is found primarily in the study of changes in the hemopoietic organs and blood picture. No substantial differences were found in the level of initial changes or in the dynamics of the subsequent development of radiation damage or in the postradiation recovery effect in the case of a nonlethal radiation dose. The phenomenon of elevated radioresistance observed after nonlethal doses of irradiation is assumed to reflect the state of hyperfunction of radiosensitive

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ACC NR: AP6029553

(primarily the hemopoietic) organs which occurs during the recovery process. The intestinal form of damage was found to be more pronounced in the case of densely ionizing radiation than in the case of sparsely ionizing radiation. The change in the correlation between the radiosensitivity of the hemopoietic organs and that of the intestine is believed to express the general radiobiological regularity that with an increase in the LET there is a decrease in differences in the radiosensitivity of individual organs and tissues. The RBE values obtained for animal mortality in the experiments can be described by the empirical formula  $RBE \approx 0.7 + 0.06 \text{ LET}$ , where therapeutic x-rays are taken as a standard radiation with  $RBE = 1.0$  and the LET value is taken in units of  $\text{kev}/\mu$ .  
Orig. art. has: 3 figures and 8 tables. [JPRS: 36,932]

SUB CODE: 06 / SUBM DATE: 13Sep65 / ORIG REF: 060 / OTH REF: 035

Card 3/3 *llb*

YARMONENKO, S.P.; KONOPLYANNIKOV, A.G.

Radiation protection as related to the problem of the relative  
biological effectiveness of rare ionizing radiations. Probl.  
kosm biol. 4:139-164 '65. (MIRA 18:9)

YARMONENKO, S.P.; KONOPLYANNIKOV, A.G.; SUVOROV, N.N.; FEDOSEYEV, V.M.

Effect of protectors in irradiation with sublethal doses. Dokl.  
AN SSSR 162 no.1:205-207 My '65. (MIRA 18:5)

1. Institut gigiyeny truda i professional'nykh zabolevaniy AMN  
SSSR: Moskovskiy gosudarstvennyy universitet i Vsesoyuznyy khimiko-  
farmatsevticheskiy Institut im. S.Ordzhonikidze. Submitted January 21,  
1965.

L 07425-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AR6027562

SOURCE CODE: UR/0272/66/000/005/0067/0067

AUTHOR: Malkin, D. D.; Stogova, Ye. N.; Konoplyannikov, Yu. A.

TITLE: Selection of electrolytes for liquid vibration treatment

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika, Abs. 5.32.483

REF SOURCE: Chasy, chas. mekhanizmy, vyp. 3(150), 1965, 11-13

TOPIC TAGS: metal polishing, electrolyte, mechanical vibration

ABSTRACT: An advantage of the liquid vibration method of treatment lies in the selective action of the working fluid: complete elimination of burrs with dimensions of several hundredths of a millimeter involves a removal with respect to contour of a few microns with an accuracy of 2-3  $\mu$ . This method may be used for treating easily deformed components made of all types of metallic materials used in the watchmaking industry. A batch of several thousand components may be treated simultaneously in a single container. It must be remembered in selecting the liquid medium that the electrolyte should interact with the parts being treated and produce a protective layer on the surface of these components to achieve selectivity in treatment, i. e. removal of material mainly on burrs and edges with a minimum removal on the principal surfaces. An aqueous solution of copper sulfate is most effective for steel components and for parts made from zinc alloys. Brass and bronze components may be treated in solutions containing ions of copper and silver and in a complex ammonia-copper solution. 3 illustrations, bibliography of 2 titles. [Translation of abstract]

SUB CODE: 11, 13

Card 1/1

UDC:681.112.002.2

SIZOV, A.P.; KONOPLYANNIKOV, Yu.A.; BOGATYREVA, S., red.

[Electric spark machining of metals; review of foreign patents] Elektroerozionnaya obrabotka metallov; obzor inostrannykh patentov. Moskva, TSentr. nauchno-issl. in-t patentnoi informatsii i tekhniko-ekon. issledovani, 1964. 46 p. (MIRA 18:6)

KONOPLYANNIK, M.M.; MITSKEVICH, N.I.

Decarboxylation and decarbonylation in the autooxidation of  
liquid paraffin hydrocarbons in the presence of various initiating  
additives. Khim. i tekhn. topl. i masel 10 no.9:24-27 S '65.  
(MIRA 18:9)

1. Institut fizicheskoy i organicheskoy khimii AN BSSR.

ARKHANGEL'SKIY, Nikolay Alekseyevich; ZAYTSEV, Boris Il'ich; ~~KONOPLYANKIN,~~  
~~A.A., red.-~~ YEMMAKOVA, Ye.A., tekhn.red.

[Automatic digital computers] Avtomaticheskie tsifrovye mashiny.  
Moskva, Gos.isd-vo fiziko-matem.lit-ry, 1958. 125 p. (Populiarnye  
lektsii po matematike, no.28) (MIRA 12:3)  
(Electronic calculating machines)

KRECHMAR, Vasilii Avgustovich; KONOPLYANKIN, A.A., red.; BRUDNO, K.F.,  
tekhn.red.

[Problems in algebra] Zadachnik po algebre. Izd.3. Moskva,  
Gos.izd-vo fiziko-matem.lit-ry. 1959. 428 p. (MIRA 12:7)  
(Algebra--Problems, exercises, etc.)



MITSKEVICH, N.I.; SOROKO, T.I.; KONOPLYANNIK, M.M.

Decarboxylation associated with the autoxidation of liquid paraffin hydrocarbons. Sbor. nauch. rab. Inst. fiz.-org. khim. AN BSSR no.8:175-185 '60. (MIRA 14:3)

1. Institut fiziko-organicheskoy khimii AN BSSR.  
(Hydrocarbons) (Carboxyl group) (Carbonyl group)

MITSKEVICH, N.I.; KONOPLYANNIK, M.M.

Decarboxylation and decarbonylation associated with the  
autoxidation of solid paraffin hydrocarbons to acids. Sbor.  
nauch. rab. Inst. fiz.-org.khim. AN BSSR no.8:200-204 '60.

(MIRA 14:3)

1. Institut fiziko-organicheskoy khimii AN BSSR.  
(Carboxyl group) (Carbonyl group)(Paraffins)

L 49782-65 EWT(m)  
ACCESSION NR: AP5012771

UR/0020/65/161/006/1448/1450

YANNIKOV, A. G.; Kudryashov, Yu. P.; Yarmenkov, P. P.

Effectiveness of recovery of mice following their exposure to 660-Mev

ORIGIN: AN ESSR. Doklady, v. 161, no. 6, 1965, 1448-1450

TOPIC TAGS: proton irradiation, mouse, lethal dose, radiation sickness, radiation recovery

ABSTRACT: Experiments were conducted to determine the postradiation recovery of mice after irradiation with x-rays and 660-Mev protons. The experimental animals were male white mice, weighing 19-22 g. They were irradiated with 660-Mev protons on a synchrocyclotron (dose power 300-400 rad/min) and with x-rays (dose power 30 rad/min). The degree of radiation injury was determined by calculating the 50% lethal dose for 30 days after irradiation. After a primary determination, two large groups of mice were irradiated with half of 150 and 295 rad, respectively, for protons and x-rays. Two, 6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96, 102, 108, 114, 120, 126, 132, 138, 144, 150, 156, 162, 168, 174, 180, 186, 192, 198, 204, 210, 216, 222, 228, 234, 240, 246, 252, 258, 264, 270, 276, 282, 288, 294, 300, 306, 312, 318, 324, 330, 336, 342, 348, 354, 360, 366, 372, 378, 384, 390, 396, 402, 408, 414, 420, 426, 432, 438, 444, 450, 456, 462, 468, 474, 480, 486, 492, 498, 504, 510, 516, 522, 528, 534, 540, 546, 552, 558, 564, 570, 576, 582, 588, 594, 600, 606, 612, 618, 624, 630, 636, 642, 648, 654, 660, 666, 672, 678, 684, 690, 696, 702, 708, 714, 720, 726, 732, 738, 744, 750, 756, 762, 768, 774, 780, 786, 792, 798, 804, 810, 816, 822, 828, 834, 840, 846, 852, 858, 864, 870, 876, 882, 888, 894, 900, 906, 912, 918, 924, 930, 936, 942, 948, 954, 960, 966, 972, 978, 984, 990, 996, 1000. After the primary irradiation, group 1 received a secondary dose of x-rays, and the lethal dose after secondary irradiation was

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SIZOV, A.P.; KONOPLYANNIKOV, Yu.A.

Electric erosion cutting of metals (according to foreign patents).  
Stan.i instr. 35 no.9:32-35 S '64. (MIRA 17:10)

COMMON ELEMENTS		PROCESSES AND PROPERTIES INDEX		COMMON ELEMENTS	
1ST AND 2ND ORDERS		1ST AND 2ND ORDERS		1ST AND 2ND ORDERS	
<p>KA</p> <p>Certain relations in the chemical processes in the underground waters of the Kara-Tau Range. A. A. Komyanov and V. I. Knauf. <i>Compt. rend. acad. sci. (U.R.S.S.)</i> 53, (3-4)(1944).—Differing intensities of tectonic movements have resulted in different rates of karst formation within the limestone-dolomite Tamda series, the principal aquifer of the Little Kara-Tau Range. In areas of greatest uplift, a high rate of karst formation has been accompanied by greater soln. resulting in underground water poor in the sulfate ion. Areas of little uplift are characterized by waters high in sulfate and Mg ions, and with greater mineralization and hardness.</p> <p>Marjorie Hooker</p>		<p>14</p>			
<p>ASS-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>					
<p>1ST AND 2ND ORDERS</p>		<p>1ST AND 2ND ORDERS</p>		<p>1ST AND 2ND ORDERS</p>	
<p>1ST AND 2ND ORDERS</p>		<p>1ST AND 2ND ORDERS</p>		<p>1ST AND 2ND ORDERS</p>	

1. KONOPLYANTSEV. A. A.
2. USSR (600)
4. Kara Tau Range, Malyy-Geology, <sup>S</sup> structural
7. Hydrogeology of the Malyy Kara Tau Range and the results of the hydrogeological study of the Chulak Tau deposits. Izv. Glav. upr. geol. fon. <sup>29</sup> '47.
9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

KONOPLYANTSEV, A. A.

FA 57T38

USGS/Geol  
Hydrol

Nov/Dec 1947

"Modulus of Underground Flow of Little Kara-Tau Range,"  
A. A. Konoplyantsev, 3½ pp

"Razvedka Nedr" No 6

Considerable amount of water needed for production  
and future use in the Kara-Tau Phosphorite Combine,  
located in an area of very light rainfall. Author  
presents hydrogeological study of Little Kara-Tau  
Mountain Range where Combine is located.

LC

57T38



KONOPLYANTSEV, A.A.

AL'TOVSKIY, M.Ye.; KONOPLYANTSEV, A.A.

[Methods guide for a study of the underground water cycle]. Metodicheskoe rukovodstvo po izucheniiu rezhima podzemnykh vod. Moskva, Gosgeoltekhizdat, 1954. 196 p. (MIRA 8:3D)

KONOPLYANTSEV, A.A.

Tasks facing hydrogeologists in the light of decisions of the  
September and February-March plenums of the Central Committee  
of the Communist Party of the Soviet Union. Rasved. i okh. nedr  
20 no.1:42-46 Ja-F '54. (MLBA 9:12)

(Water supply)

KONOPLYANTSEV, A.A., redaktor; KRASULIN, V.S., redaktor; SHIROKOV, A.S.,  
redaktor; KOLOSKOVA, M.I., redaktor izdatel'stva; GUROVA, O.A.,  
tekhnicheskiy redaktor

[Experience in using geophysical methods of prospecting in hydro-  
geological, engineering and geological research] Opyt primeneniia  
geofizicheskikh metodov razvedki i gidrogeologicheskikh i inzhenerno-  
geologicheskikh issledovaniyakh. Pod red. A.A.Konopliantseva, V.S.  
Krasulina i A.S.Shirokova. Moskva, Gos. nauchno-tekhn. izd-vo lit-  
ry po geol. i okhrane neдр, 1955. 74 p. (MIRA 9:8)

1. Russia (1923- U.S.S.R.) Ministerstvo geologii i okhrany neдр.  
Tekhnicheskiy sovet.  
(Prospecting--Geophysical methods)

KONOPLYANTSEV, A.A.  
**KONOPLYANTSEV, A.A.; CHURINOV, M.V.**

Small scale hydrogeological survey maps. Razved. i okh. nedr 23 no.4:  
50-54 Ap '57. (MIRA 11:1)

1. Ministerstvo geologii i okhrany nedr SSSR i Vsesoyuznyy nauchno-  
issledovatel'skiy inatitut gidrogeologii i inzhenernoy geologii.  
(Geology--Maps) (Water, Underground)

KONOPLYANTSUV, A.A.

New magazine "Hydrogeology and engineering geology" published in the Chinese People's Republic. Rasved. i okh. nedr 23 no.6:62-63 Je '57.  
(MIRA 11:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii.  
(China--Geology--Periodicals)

ХОНОПЛЯНТОВ

132-12-7/12

AUTHOR: Churinov, M.V., and Konoplyantsev, A.A.

TITLE: Socialist Construction Aided by Hydrogeology and Engineering Geology (Gidrogeologiya i inzhenernaya geologiya na sluzhbe sotsialisticheskogo stroitel'stva)

PERIODICAL: Razvedka i okhrana nedr, 1957.<sup>23</sup># 12, p 45-52 (USSR)

ABSTRACT: Hydrogeologic research covers the fields of water supply, irrigation, industry, road building, airfield and town planning, and prospecting. To meet these requirements, the number of hydrogeologic stations was increased from 16 in 1937 to 39 in 1939 with 2,000 observation points. Attached to the Academy of Sciences USSR was the Laboratory for Geologic Problems. By order of the "CHK" of the USSR of November 2, 1939, the hydrogeologic stations were administered by the Committee of Geology at the "CHK" USSR. During World War II the hydrogeologic stations were requested to perform new tasks, of which the main assignments pertained to:

1. Study of deep underground water resources for the extraction of iodine and bromine.
2. Prospecting for water for military, civilian and industrial purposes.

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132-12-7/12

**Socialist Construction Aided by Hydrogeology and Engineering Geology**

3. Geologo-engineering research of dams at small rivers.
  4. Development of faster methods of the study of physico-mechanical properties of mountain rocks.
  5. Artificial strengthening of the underground for the construction of airfields and roads.
  6. Geologic and hydrogeologic research in Siberia, Ural and Central Asia in connection with the evacuation of industries and development of new mineral resources.
- Expansion of hydrotechnical construction after World War II called for intensive hydrogeologic and engineering work. Besides the above mentioned tasks the organizations of the Ministry of Geology and Conservation of Natural Resources were requested to perform the following work:
- a. Geologic surveying.
  - b. Prospecting for water resources on virgin soils and waste lands.
  - c. Drilling of water wells for agricultural purposes.
  - d. Geologic surveying for the installation of melioration and building of water reservoirs.
  - e. Experiments for vertical drainage systems on saline soils

Card 2/3

KONOPLYANTSEV, A.A.; VLADIMIROV, A.A.

Using underground waters for irrigation (with summary in English).  
Sov. geol. 1 no.4:111-123 Ap '58. (MIRA 11:6)

1. Vsesoyuzny nauchno-issledovatel'skiy institut gidrogeologii i  
inzhenernoy geologii.  
(Water, Underground) (Irrigation)



KONOPLYANTSEV, A.A.

Third All-Union Conference on hydrology (studies on underground waters and underground water supply to rivers). Razved. i okh.nedr 24 no.1:60-61 Ja '58. (MIRA 11:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii.  
(Water, Underground)

132-58-3-15/15

AUTHOR: Konoplyantsev, A.A.

TITLE: The Second Hydro-Geological Conference of Uzbekistan (Vtoroye Uzbekistanskoye gidrogeologicheskoye soveshchaniye)

PERIODICAL: Razvedka i Okhrana Nedr, 1958, Nr 3, pp 63-64 (USSR)

ABSTRACT: The 2nd Hydro-Geological Conference of Uzbekistan, organized by the Institute of Geology of the AS of the Uzbek SSR, in collaboration with the Hydro-Geological Trust of Uzbekistan, took place in Tashkent from 3 to 8 February 1958. The conference was opened by the President of the Uzbek SSR Academy of Sciences, Academician Kh.M. Abdullayev, who stressed the importance of this conference, which will prepare the ways for further developments of hydro-geology and engineering geology of Uzbekistan. The conference heard the following reports: Honored Scientists of the Uzbek SSR, O.K. Lange and N.A. Kenesarin, on "Results and Achievements of Hydro-Geology of Uzbekistan During 40 Years Under the Soviet Government and Its Future Tasks"; N.A. Kenesarin on "Preliminary Results of the Study of the Ground Water Supply in Uzbekistan"; M.M. Krylov on "Meliorative Hydro-Geology and Its Tasks in Uzbekistan";

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The Second Hydro-Geological Conference of Uzbekistan

132-58-3-15/15

Academician of the AS of the UZbek SSR, A.S. Uklonskiy, on  
"Results of Study of the Isotope Composition of Natural  
waters of Central Asia"; G.N. Kamenskiy and I.V. Garmonov, on  
"The Formation of Underground Waters and Their Zonal Distri-  
bution in the Dry Regions of the USSR", and M.Ye. Al'tovskiy  
on "Basic Problems of the Formation of Underground Waters".

ASSOCIATION: VSEGINGEO

AVAILABLE: Library of Congress

Card 2/2 1. Geology-USSR 2. Conferences-Hydro-Geological-Uzbekistan

USCOMM-DC-54756

132-58-7-12/13  
AUTHORS: Konoplyantsev, A.A., Marinov, N.A., Titov, N.A.  
TITLE: Engineering - Geological Research in the German Democratic Republic (Inzhenerno-Geologicheskkiye issledovaniya v Germanской Demokraticheskoy Respublike)  
PERIODICAL: Razvedka i okhrana nedr, 1958<sup>24</sup>/<sub>9</sub> Nr 7, pp 59-62 (USSR)  
ABSTRACT: The authors give a short survey of geological engineering activity in East Germany  
ASSOCIATION: VSEGINGEO [All-Union Scientific Research Institute of Hydrogeology and Geological Engineering]  
1. Geology--Germany 2. Scientific research--Germany

Card 1/1

3(2,5)

SOV/132-59-2-14/16

AUTHOR: Konoplyantsev, A.A.

TITLE: A Map of the Hydro-Geological Division of China into  
~~Areas~~ (Karta gidrogeologicheskogo rayonirovaniya  
Kitaya)

PERIODICAL: Razvedka i okhrana nedr, 1959, Nr 2, pp 56 - 58  
(USSR)

ABSTRACT: This map, published in 1958, was prepared for publication by a group of Chinese geologists who worked under direct technical supervision of the Soviet specialist B.D. Rusanov and with the collaboration of M.M. Krylov and D.F. Agap'yev. On this map, Chinese territory is divided into seven hydro-geological provinces, each province having its own hydro-geological, geographical and geological character.

ASSOCIATION: (VNIIGaz)

Card 1/1

SCV/132-59-4-17/17

AUTHOR: Konoplyantsev, A.A.

TITLE: A Conference of Workers of Hydro-Geological Stations

PERIODICAL: Razvedka i okhrana neдр, 1959, Nr 4, pp 61-63  
(USSR)

ABSTRACT: The Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii (the All-Union Scientific Research Institute of Hydro-Geology and Geological Engineering (VSEGINGEO) organized a conference of workers of hydro-geological and land-slide observation stations, which took place in Moscow from 24 to 26 February 1959. There are 53 hydro-geological and 8 land-slide observation stations, studying and checking the conditions of ground water and land-slide phenomena. At present there are 9,635 observation posts in different parts of the USSR. Systematic observations over

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SOV/132-59-4-17/17

• A Conference of Workers of Hydro-Geological Stations

many years have established general rules and schemes of the decrease and increase of the ground water levels for whole regions. Reports on different problems of hydro-geology were read by: P.M. Gass, M.M. Kostyuchenko-Pavlova, D.M. Kats, A.G. Golub', I.M. Korniyenko, A.P. Lavrovyy, G.Yu. Israfilov, V.A. Korobeynikov, I.T. Grudinskaya, N.S. Biryukov. The head of the Department of Hydro-Geology and Geologic Engineering of the Ministry of Geology and Conservation of Mineral Resources of the USSR, V.M. Fomin, reported on the "Problems of Hydro-Geologic and Geologic Engineering Works during the Seven Year Plan." Different decisions for the further development of hydro-geological survey in the USSR were taken.

ASSOCIATION: VSEGINGEO

Card 2/2

USCOMM-DC-60,823

3(5)

SOV/132-59-7-10/17

AUTHOR: Konoplyantsev, A.A.

TITLE: On the Principles of Regional Evaluation of Overall  
Conditions of Ground Waters

PERIODICAL: Razvedka i okhrana nedr, 1959, Nr 7, pp 37-43 (USSR)

ABSTRACT: Different methods have recently been developed to establish and forecast the overall conditions of accumulation and discharge of ground waters in different parts of the USSR, as for instance the methods of hydrodynamic analysis of ground waters (method of terminal differences, proposed by G.N. Kamenskiy). Up to now these forecasts were made for relatively restricted regions of the USSR. In this article the author cites different factors, the knowledge of which will permit one to forecast the overall conditions over the whole USSR. M.Ye. Al'tovskiy and N.K. Girinskiy already defined these conditions as being the result of a combined action of meteorological, geomorphological and lithological factors, in addition to the natural

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SOV/132-59-7-10/17

On the Principles of Regional Evaluation of Overall Conditions  
of Ground Waters

surface conditions (rivers, lakes, reservoirs, etc). The largest genetic classification scheme of ground waters was proposed by M.Ye. Al'tovskiy, who took into considerations the above factors. In his classification, he characterized the types of overall conditions for whole provinces. Other authors, such as G.N. Kamenskiy, made it for much smaller parts of the territory. Research conducted by V.I. Il'in, B.L. Lichkov, O.K. Lange and G.N. Kamenskiy established the zonality of ground waters. According to the author, the most important task is to determine the types of overall conditions of ground waters created by the character and the possibility of the discharge and delivery of the water into the water-bearing horizons. He singles out 1 azonal and 3 zonal types of overall conditions for the whole USSR: 1) - zonal type of short-period delivery of water; 2) - zonal type of seasonal water delivery; 3) - zonal type of year-round delivery; and 4) - azonal type of artificial water delivery. The

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On the Principles of Regional Evaluation of Overall Conditions  
of Ground Waters

first zone is characterized by the transition from liquid to solidified (frozen) state and by short-lived summer flow of the ground waters. The second type is characterized by the absence of water delivery in winter time, the third type - by the delivery of water all year round. The fourth type is created artificially as a result of drainage operations and other artificial replenishments of the water-bearing horizons. He divides the four basic zonal types into sub-types, and the sub-types into three classes each. This subdivision is conditioned by specific meteorological, geomorphological and lithological factors different for each sub-type and class. In case of necessity, a more detailed division of classes can be made. There is 1 table, 1 graph and 7 Soviet references.

ASSOCIATION:VSEGINGEO

Card 3/3

KONOPLYANTSEV, A.A.

Map of hydrogeological regions of China. Razved. i okh. nedr  
25 no.2:56-58 F '59. (MIRA 12:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i  
inzhenernoy geologii.  
(China--Water, Underground--Maps)

KONOPLIKOVA, L....

General ... of ... of underground waters. Sov. geol.  
3 no. 12: 1-87 L '66. (MIA 14:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii  
i inzhenerologii. (MIA 14:2)  
(Water, underground)

KONOPLYANTSEV, A.A.

"Supplying water to mining enterprises" by N.I. Plotnikov. Reviewed  
by A.A. Konopliantsev. Razved. i okh. nedr 26 no.10:62-63 0 '60.  
(MIRA13:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i  
inzhenernoy geologii.  
(Prospecting--Water supply)

KONOPLYANTSEV, A.A.; KOVALEVSKIY, V.S.

Principles underlying the study of the natural regime of ground  
waters. Meteor.i gidrol. no.6:28-35 Je '61. (MIRA 14:5)  
(Water, Underground)

GARMONOV, I.V., doktor geol.-mineral. nauk; KONOPLIANTSEV, A.A. kand.geol.-  
mineral.nauk

Investigation of underground waters in the countries of Asia and  
the Far East. Vest. AN SSSR 32 no.10:75-77 0 '62. (MIRA 15:10)  
(Asia--Water, Underground)  
(Far East--Water, Underground)

KATS, D.M.; KONOPLYANTSEV, A.A.; IVANOVA, A.G., tekhn. red.

[Review of the study of underground water conditions in  
foreign countries] Obzor izucheniia rezhima podzemnykh vod  
za rubezhom. Moskva, M-vo geologii i okhrany neдр SSSR,  
1961. 36 p. (MIRA 16:3)  
(Water, Underground)



KATS, D.M.; KONOPLYANTSEV, A.A.

Role of the study of the regime of underground waters in solving practical problems. Razved. i okh. nedr 27 no.9:35-42 S '61.  
(MIRA 17:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii.

KONOPLYANTSEV, A.A.; KOVALEVSKIY, V.S.; LEBEDEV, A.V., nauchn.  
red.

[Principles of the distribution of an observation net  
for the study of the natural regime of underground  
waters; methodological instructions] Printsipy razme-  
shcheniya nabludatel'noi seti dlia izucheniia este-  
stvennogo rezhima podzemnykh vod; metodicheskie ukaza-  
niia. Moskva, 1963. 47 p. (MIRA 17:9)

1. Moskva. Vsesoyuznyy nauchno-issledovatel'skiy insti-  
tut gidrogeologii i inzhenernoy geologii.

KONOPLYANTSEV, A.A.; KOVALEVSKIY, V.S.; SEMENOV, S.M.; KUDELIN, B.I.,  
retsensent; AL'TOVSKIY, M.Ye., retsensent; BEREZOVSKAYA, L.I.,  
red.izd-va; BYKOVA, V.V., tekhn.red.

[Natural regime of underground waters and its characteristics]  
Estestvennyi rezhim podzemnykh vod i ego zakonomernosti. Moskva,  
Gosgeoltekhizdat, 1963. 229 p. (Moscow. Vsesoiuznyi nauchno-  
issledovatel'skii institut gidrogeologii i inzhenernoi geologii.  
Trudy, no.2). (MIRA 17:4)

KONOPLYANTSEV, A.A.; KOVALEVSKIY, V.S.; SEMENOV, S.S.

Some regional characteristics of the regime of ground waters in  
the U.S.S.R. Sov. geol. 7 no.9:121-125 S '64. (MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i  
inzhenernoy geologii.

KONOPLYANTSEV, A.A.

Some problems in the study of the regime of underground waters  
in the U.S.S.R. Trudy VSEGINGEO no.10:5-17 '64.

Studying the natural regime of underground waters in relation  
to the estimation of their exploitation reserves. Ibid.:37-45  
(MIRA 17.10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii  
i inzhenernoy geologii.

KONOPLYANTSEV, A.A.; SEMENOV, S.M.; GOLUB', A.G.; KARATLUYEVA, S.S.

Regionalization of the northern slope of the Trans-Ili Alatau and the alluvial Ili Depression adjacent to it according to the characteristics of the regime of ground waters. Trudy VSEGINGEO no.10:139-151 '64.

(MIRA 17:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii.

GARMONOV, I.V.; KONOPLYANTSEV, A.A.

Effect of the artificial lowering of the underground water level on the condition of the earth's surface. *Revised. i*  
okh. nestr. 30 no.2:45-48 F '64. (MIRA 17:8)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrogeologii i inzhenernoy geologii.

KONOPLYANTSEV, A. A.

"Principles of distribution of observation hydrogeological wells for regional study of unconfined ground water regime."

paper submitted for Intl Symp on Hydrological Networks, Design of, Quebec, 15-22 June 1965.



SKVORTSOV, Grigoriy Grigor'yevich, starshiy nauchnyy sotr.;  
ROMANOVSKAYA, Lidiya Ivanovna, mladshiy nauchnyy sotr.;  
POPOV, I.V., retsenzents DUBROVKIN, V.L., retsenzents;  
PROKHOROV, S.P., retsenzents; KONOPLYANTSEV, A.A.,  
retsenzents; GRISHINA, T.B., red. izd-va; BYKOVA, V.V.,  
tekhn. red.

[Geological engineering observations in constructing and  
exploiting open-pit mines; methodological instructions]  
Inzhenerno-geologicheskie nabludeniia pri stroitel'stve i  
ekspluatatsii kar'erov; metodicheskie ukazaniia. Moskva,  
Gosgeoltekhizdat, 1962. 58 p. (MIRA 15:10)  
(Engineering geology) (Strip mining)

AL'TOVSKIY, M.Ye.; CHAPOVSKIY, Ye.G.; BABUSHKIN, V.D.; BINDEMAN,  
N.N.; LAPTEV, F.F.[deceased]; SOKOLOV, I.Yu.; CHALISHCHEV,  
A.M.[deceased]; PROKHOROV, S.P.; TOKAREV, A.N.; KOROTKEYEV,  
A.P.; ABRAMOV, S.K.; KONOPLYANTSEV, A.A., red.; PRIKLONSKIY, V.A.,  
red. deceased]; SPITSYN, N.I., red.; MARINOV, N.A., red.;  
KULICHIKHIN, N.I., red.; GARMONOV, I.V., red.; LYUBCHENKO, Ye.K.,  
red. izd-va; POTAPOV, V.S., red. izd-va; GUROVA, O.A., tekhn.  
red.

[Hydrogeologist's handbook] Spravochnik gidrogeologa. Pod ob-  
shchei red. M.E.Al'tovskogo. Moskva, ostoltekhizdat, 1962.  
615 p. (SIRA 15:7)

(Water, Underground)

RYABCHENKOV, A.S.; ANTONENKO, K.I.; TITOV, N.A.; CHAPOVSKIY, Ye.G.;  
 CHURINOV, M.V.; KONOPIYANTSEV, A.Z.; VIKTOROV, S.V.; VOSTOKOVAYA,  
 Ye.A.; SADOVSKIY, N.D.; KUDELIN, B.I.; OGIL'VI, N.A.;  
 LUNGERSGAUZEN, G.F.; BRODSKIY, I.A.; SHCHERBAKOV, A.V.; POPOV,  
 V.N.; YEMEL'YANOVA, Ye.P.; SOKOLOV, S.S.; BERSENEV, I.I.; GROSHIN,  
 S.I.; MAKKAVEYEV, A.A.; MARINOV, N.A.; YEFIMOV, A.I.; ASSOVSKIY,  
 G.N.; VLADIMIROV, A.G. [deceased]; PROKHOROV, S.P.; FILIPFOVA,  
 B.S., red. izd-va; BYKOVA, V.V., tekhn. red.

[Methodological manual on hydrogeological surveying at the scales  
 of 1:1,000,000 - 1:500,000 and 1:200,000 - 1:100,000] Metodiche-  
 skoe rukovodstvo po gidrogeologicheskoi s"emke masshtabov  
 1:1000 000 - 1:5000 000 i 1:200 000 - 1:100000. Pod obshchei  
 red. A.A.Makkaveeva i A.S.Riabchenkova. Moskva, Gos. nauchno-  
 tekhn. izd-vo lit-ry po geol. i okhrane neдр, 1961. 318 p.  
 (MIRA 15:3)

1. Russia (1923- U.S.S.R.) Ministerstvo geologii i okhrany neдр.  
 (Water, Underground) (Geological surveys)

KONOPLYANTSEV, M.A.

An instance of geometric representation of ore bodies in calculating resources. Razved.i okh.nedr 22 no.4:48-49 Ap '56. (MLBA 9:8)

1. Karagandinskoye geolupravleniye.  
(Mines and mineral resources--Measurement)

AUTHOR: Konoplyantsev, M.A. SOV-132-58-9-3/18

TITLE: The Correlation Between Surveying, Prospecting and Exploratory Operations (O vzaimosvyazi s"yemki, poiskov i razvedki)

PERIODICAL: Razvedka i okhrana nedr, 1958,<sup>23</sup> Nr 9, pp 11-14 (USSR)

ABSTRACT: Surveying, prospecting and exploring operations are all concerned with the discovery, description and evaluation of mineral deposits. The author finds that the instructions and textbooks available in the Union very often give contradictory definitions of the precise task of each operation. The development of new instructions, which will determine and synchronize with precision all these operations is urgently needed.

ASSOCIATION: Tsentral'no-Kazakhstanskoye geolupravleniye (The Central Kazakhstan Geological Administration)

1. Minerals--USSR 2. Geophysical prospecting--USSR 3. Geophysical surveying--USSR

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KONOPLYANTSEV, M.A.

Molybdenum deposit in central Kazakhstan [with summary in English].  
Sov. geol. 2 no.2:85-104 F '59. (MIRA 12:5)

1. Akkul'skaya geologerazvedchnaya partiya.  
(Kazakhstan--Molybdenum ores)

ARKHIPETS, Ye.Ya. (Kiyev); BONDAROVICH, I.M. (Khar'kov); BULANOV, V.N. (Kiyev);  
 GALUSKIN, V.B. (Kiyev); GOGOTSI, G.A. (Mikolayev); GORBUNOVA, N.N.,  
 (Kiyev); GORLITSKIY, B.A. (Kiyev); DYADYUSHA, G.G. (Kiyev); KATSEHL'SON,  
 I.Ye. (Dnepropetrovsk); KVITCHUK, E.A. (Kiyev); KIRILLOV, I.A., (Kryn)  
 KONOPLYASOVA, N.S. (Chernovtsy); NIKOL'SKIY, V.V. (Kiyev); PONOMARENKO,  
 A.A. (Stanislav); PESCHANSKIY, A.I. (Kiyev); POPOV, V.N. (Kiyev);  
 PRASHNIKOVA, I.V. (Uzhgorod); STESHENKO, N.G. (Kiyev); CHAYKIN, M.M.  
 (Vinnitsa); SHAPOSHNIKOVA, N.N. (Kiyev); SHPORTYUK, V.I. (Kiyev);  
 YANKO, N.M. (Stalinskaya oblast'); SVETCHNIKOVA, N., redaktor;  
 SMORODSKIY, V., tekhnicheskii redaktor

[Tourist routes through the Ukraine] Turistskie marshruty po Ukraine.  
 Kiev, Izd-vo TsK LKSMU "Molod'," 1957. 368 p. (MIRA 10:8)  
 (Ukraine--Description and travel)

AUTHORS: Baranskiy, P. I., Konoplyasova, N. S. SOV/57-58-8-1/37

TITLE: Investigation of the Volume-Gradient Thermo-e.m.f. and of the Heat Conductivity in Germanium Monocrystals With Definite Crystallographic Orientation (Izucheniye ob'yemno-gradiyentnoy termoeds i teploprovodnosti v monokristallakh germaniya izvestnoy kristallograficheskoy oriyentatsii)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, <sup>28</sup>Nr 8, pp. 1621 - 1630 (USSR)

ABSTRACT: In this paper a method for the investigation of the volume-gradient thermo e.m.f.  $\mathcal{U}_\alpha$  is exposed. This voltage is generated when a grad T is present in the sample because of the volume heterogeneities. This method was tested in experiments with germanium. The function of the ordinary thermo e.m.f.  $\alpha_{\text{Ge-Cu}}$  versus T and the dependence of the volume-gradient thermo e.m.f. upon the temperature was investigated. The following was confirmed: 1) The transition to an intrinsic conductivity with varying temperature (which is observed, when the sign of the ordinary thermo e.m.f.  $\alpha_{\text{Ge-Cu}}$  is inversed) is accompanied by a reduction of the volume-gradient thermo e.m.f.

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Investigation of the Volume-Gradient Thermo-e.m.f. SOV/57-58-8-1/37  
and of the Heat Conductivity in Germanium Monocrystals With Definite  
Crystallographic Orientation

2) If temperatures are sufficiently high (and correspond to the conditions of intrinsic conduction ) the volume-gradient thermo e.m.f. within experimental errors is independent of the crystallographical orientation and equal to zero. The isotropy of thermo e.m.f. in germanium is substantiated. Measurements of the volume-gradient thermo e.m.f. of samples annealed at 500°C for 32 hours proved that the effect is indifferent to annealing. This proves that not the lattice defects but the heterogeneities in the distribution of residual impurities in germanium are responsible for the generation of the volume-gradient thermo e.m.f.  $\ell_\alpha$ . It was shown that  $\ell_\alpha$  disappears in the temperature range of intrinsic conduction also in annealed samples. The heat conductivity in germanium is also isotropic, as was shown with an accuracy of  $1 \div 2\%$ . The heat conductivity versus temperature function was measured in the temperature interval of  $77 \leq T \leq 370^\circ\text{K}$ . The free length of path of the phonons was estimated according

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Investigation of the Volume-Gradient Thermo-e.m.f. SOV/57-58-8-1/37  
and of the Heat Conductivity in Germanium Monocrystals With Definite  
Crystallographic Orientation

to the accurate value of the heat conductivity of Ge at room temperature. It amounted to  $2.8 \cdot 10^{-6}$  which equals about 50 lattice parameters of Ge. The germanium crystals were made available by E.B.Mertens (deceased) and A.N.Kvasnitskaya. There are 3 figures, 4 tables, and 8 references, 5 of which are Soviet.

ASSOCIATION: Institut fiziki AN USSR, Kiyev (Kiyev, Physics Institute, AS  
Ukr SSR)  
SUBMITTED July 22, 1957

Card 3/3

20795

S/181/61/003/003/021/030  
B102/B205

9.4300(1143,1150,1151,1161)

AUTHORS: Baranskiy, P. I., Dzyubenko, G. M., and Konoplyasova, N. S.

TITLE: Experimental study of the nature of the volume-gradient emf occurring in germanium in the presence of a current

PERIODICAL: Fizika tverdogo tela, v. 3, no. 3, 1961, 876-883

TEXT: In an earlier paper (Ref. 1: ZhTF, XXVIII, 1896, 1958), Baranskiy et al. reported on the detection of a volume-gradient emf,  $\mathcal{E}_p^*$ , which occurs at the resistivity gradients ( $\nabla \rho$ ) in single crystal crystals of n-type and p-type germanium during the passage of a current. Consideration of the specific peculiarities of bipolar carrier diffusion (theoretically and experimentally studied by V. Ye. Lashkarev) indicates that  $\mathcal{E}_p^*$  is probably due to the injection of minority carriers from one part of an inhomogeneous specimen into another. This assumption was checked by a measurement of the resistivity,  $\rho$ , by a probe compensation method. The authors proceeded from the following: If  $\mathcal{E}_p^*$  is due to the factors assumed, the potential drop between the measuring drops can only increase if the direction of  $\nabla \rho$

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Experimental study ...

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The rapid decrease of  $\mathcal{E}_p^*$  after the maximum is related to a homogenization of the specimen, caused by an increase in the intrinsic carrier concentration ( $p/n$  approaches unity). In the region of growth, the function  $\mathcal{E}_p^*(T)$  corresponds to  $p/n = f(T)$ , which is in accordance with the results obtained by Z. A. Demidenko and K. B. Tolpygo. The current dependence of  $\mathcal{E}_p^*$  under strictly isothermal conditions has also been studied. The empirical relation  $\mathcal{E}_p^* = A(e^{aI} - 1)$  has been found already earlier. An exponential function with an exponent 2 in the first part and an exponent  $< 2$  at higher amperages was obtained for  $\mathcal{E}_p^*(I)$  by exact measurements (cf. Fig. 10). Results: 1) All the factors reducing the effective carrier lifetime  $\tau_{eff}$  also reduce  $\mathcal{E}_p^*$ . 2) A correlation exists between the temperature dependence of  $\mathcal{E}_p^*$  and that of  $p/n$ . Both  $\mathcal{E}_p^*$  and  $n_1^2$  are proportional to  $\exp(-\Delta\mathcal{E}/kT)$  ( $n_1$  - intrinsic carrier concentration,  $\Delta\mathcal{E}$  - forbidden band width). 3) The "floating particles" are not responsible for the occurrence of  $\mathcal{E}_p^*$  in Ge. 4)  $\mathcal{E}_p^*(I)$  is an exponential function. 5) The experimental

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Experimental study ...

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data indicate that  $\epsilon_p^*$  is caused by distributed injection (exclusion) of minority carriers. V. Ye. Lashkarev, Academician AS UkrSSR, is thanked for discussions. There are 10 figures and 8 references: 6 Soviet-bloc and 1 non-Soviet-bloc. f

ASSOCIATION: Institut fiziki AN USSR Kiyev (Institute of Physics, AS UkrSSR, Kiyev)

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Kierownik Oddziału Noworodkowego: doc. dr Med. I. Bielicka.  
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